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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,508 01/06/2006 Andrew Charlton Clothier 424662011500 1875

25227 7590 01/24/2007
MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 300
MCLEAN, VA 22102

EXAMINER

RO, BENTSU

ART UNIT	PAPER NUMBER
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2837

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS 01/24/2007 PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/538,508	CLOTHIER ET AL.	
	Examiner	Art Unit	
	Bentsu Ro	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-16 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-16 and 18-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

FINAL REJECTION

1. For claims 1-5, 7-16 and 18-22, the examiner maintains the same rejection as that of the first office action, mailed 6/23/2006. Namely:

- Claims 2, 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- Claims 1-5, 7-16 and 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuriyama US Patent No 5,705,904.

Applicant is referred to the first office action for the details. The examiner maintains the same rejection because the examiner believes that his first office action is correct, accurate, and proper.

2. Applicant's remarks have been fully considered, but they are not convincing because of the following reasons.

Applicant's remarks:

In the remarks page 2, lines 14-16, applicant argues that
"Although claims 10-16 and 19-22 are pending in this application, the Examiner has refused to examine them, stating in a "Special Note" on page 6 of the Action that he considers these claims to be "restrictable."".

Examiner's response:

To make any argument or remark, applicant must read the whole Examiner's note and respond thereto in a full and faithful manner. Obviously, applicant has failed to do that. Applicant must note that the examiner's restriction is only applicable if applicant argues the patentability based on the "different types of uses". If applicant does not argue the patentability based on the type of use, then the examiner will not make any restriction. In view of the foregoing, the examiner has never refused claims 10-16 and 19-22. In fact, the examiner has examined all pending claims in the first office action, including claims 10-16 and 19-22.

Then why the examiner will make a restriction if applicant argues the patentability based on the type of use. This is because the examiner must go to a specific area to search the same type of invention. For example, the examiner must search reluctance motor for claim 10, vacuum cleaner for claim 12, surface treating device for claim 13, agitator for claim 14, transformer for claim 16, impeller for claim 20, etc. The examiner simply cannot do that for a short period of time. Therefore, the restriction is a MUST.

Applicant's remarks:

In the remarks page 2, lines 16-18, applicant states that
*"Applicants respectfully traverse..... and protest against the Examiner's failure to follow appropriate Office procedure in refusing to examine claims 10-16 **without giving applicants a chance to respond to a restriction requirement.**"* (Emphasis added.)

Examiner's response:

This statement is extremely absurd because the examiner has never make any restriction. If no restriction is made, how can the examiner give applicant a chance to respond ????? Even if the examiner intends to make a restriction, how can applicants predict beforehand that the examiner will not give applicant a chance to respond. Further, how can applicants assert that the examiner's first restriction will be a final and give applicants no chance to respond ?????

Applicants argument:

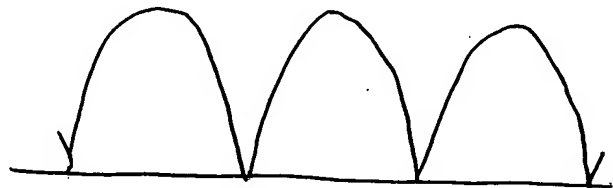
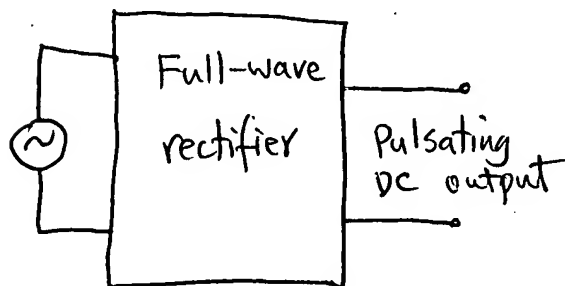
Regarding the 35 USC 112 rejection of claims 2 and 3, applicants argue that claim 1 defines "falls below 15% of the nominal peak", this definition reads onto a maximum ripple. The examiner's interpretation of "minimum ripple" is a "misread".

Examiner's response:

This requires a special knowledge in the rectifier circuit. The following is the examiner's explanation and interpretation.

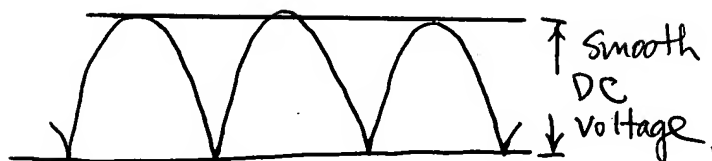
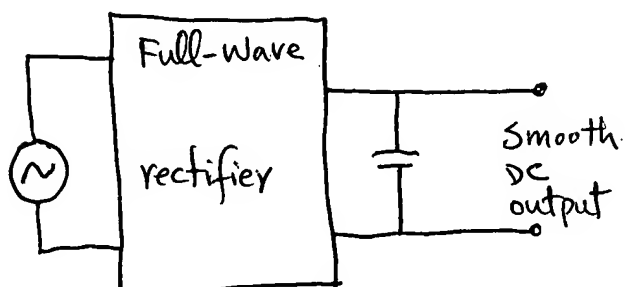
The following circuit and waveform show a full-wave rectifier without a smoothing capacitor and without a load.

[insert drawing #1]



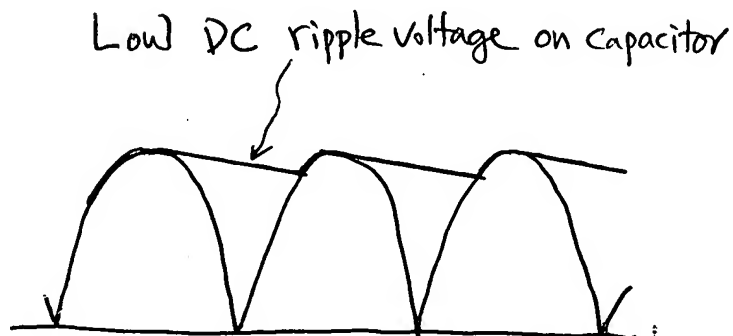
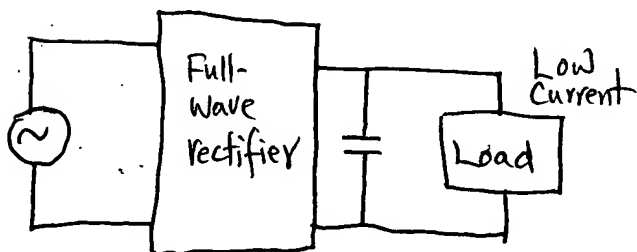
The following circuit and waveform show a full-wave rectifier with a smoothing capacitor but without a load.

[insert drawing #2]



The following circuit and waveform show a full-wave rectifier with a smoothing capacitor and with a low current load.

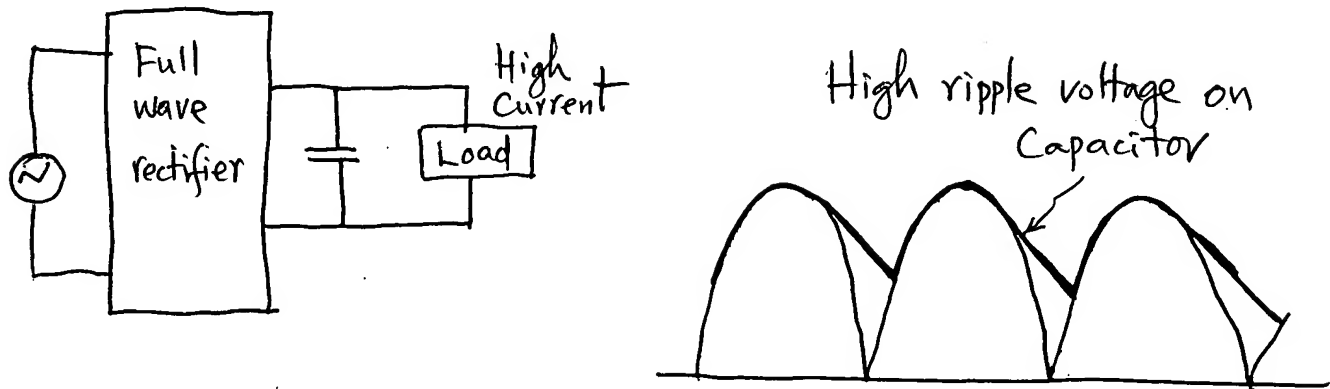
[insert drawing #3]



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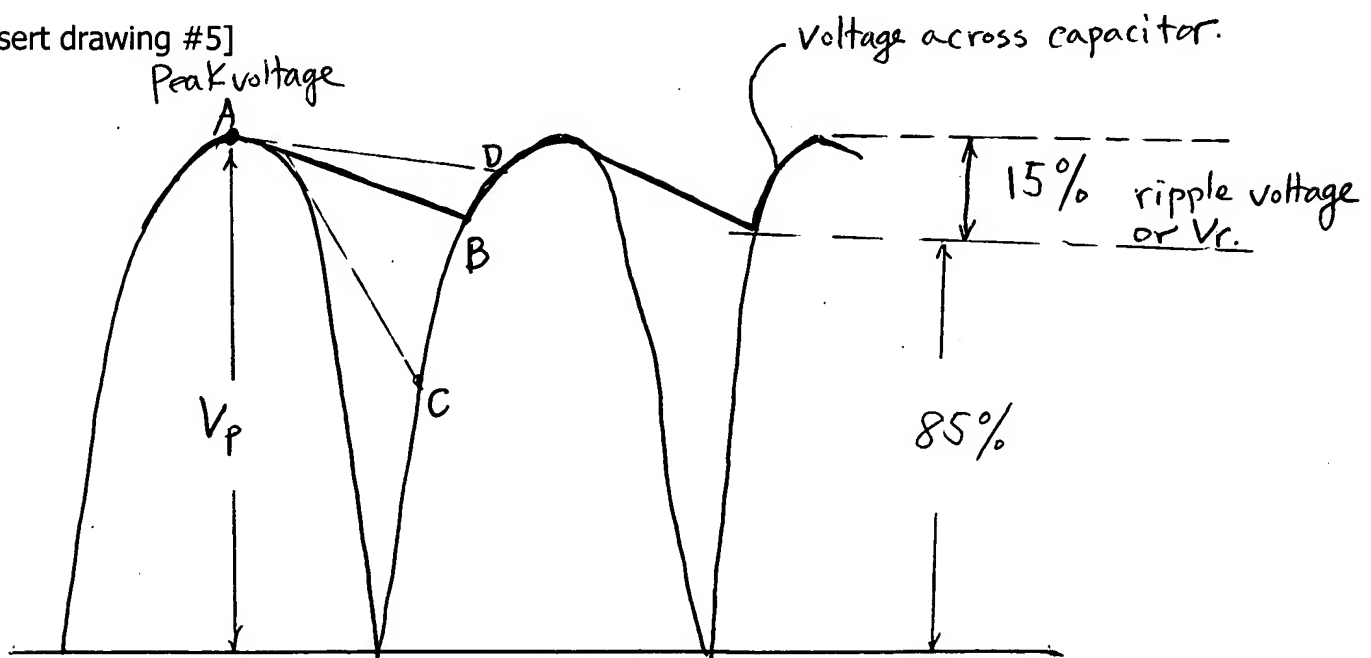
The following circuit and waveform show a full-wave rectifier with a smoothing capacitor and with a high current load.

[insert drawing #4]



Explanation and interpretation of claim 1 with drawing showing the details.

[insert drawing #5]



V_p = nominal peak rectified voltage.

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Points:

A ----- the nominal peak rectified voltage;

B ----- exactly below 15% of the peak voltage;

C ----- falls below 15% of the peak voltage;

D ----- falls above the 15% point.

Because claim 1 calls for "the voltage across the capacitor **falls below 15%** of the nominal peak rectified voltage of the source during each cycle of the alternating source." (Emphasis added.).

Point D cannot be "falls below 15%", only point C can because the peak voltage is at point A, and 15% below A is B. Fall below 15% should be any points below point B, that is point C, not point D. Therefore, the examiner's interpretation is accurate and correct.

Applicants argument:

Regarding the rejection of claims 1-5, 7-16 and 18-22 over Kuriyama US Patent No. 5,705,904, applicant argues that the Kuriyama does not show the fluctuation of the capacitor voltage.

Applicant further requests the examiner to explain, or cite a reference, or provide a declaration of personal knowledge pursuant to 37 CFR 1.104(d)(2) for the existence of a capacitor voltage fluctuation.

Examiner's response:

The examiner has a textbook, "Microelectronic Circuits", by Sedra/Smith. In the textbook, page 190, there is shown an equation (3.75) for the calculation of a ripple voltage of a full-wave rectifier.

$$V_r = V_p / 2fCR \quad (3.75)$$

wherein V_r is a capacitor ripple voltage; V_p is a peak voltage; f is the frequency of a power source; C is the capacitor; R is the load impedance.

As explained in the first office action and in the above equation (3.75), the capacitor ripple voltage depends on f , C and R . As known in mathematics, if one equation has one unknown, the equation can be solved exactly. If one equation has two unknown or more, the equation cannot be solved with an exact solution, then, there will be an infinite number of solutions to that equation. Because equation (3.75) has three unknown parameters, f , C , R , this equation cannot be solved exactly and this equation has an infinite number of solutions. In order to satisfy applicant, the examiner has calculated several R , C values for capacitor ripple voltage $V_r = 15\%$ for a full-wave rectifier at 60 Hz. The examiner has further linearized the equation so that the equation can be represented by a straight line.

Calculation examples:

If $C = 100 \text{ uf}$, then $R = 555.6 \text{ } \Omega$. If $C = 1000 \text{ uf}$, then $R = 55.56 \text{ } \Omega$. If $C = 500 \text{ uf}$, then $R = 111.1 \text{ } \Omega$. See the attached examiner's calculation manuscript page 1.

Simplification of equation (3.75) by a straight line:

The equation (3.75) can be simplified and represented by a two-dimensional coordinate log-log straight line. The simplification is shown in the examiner's calculation manuscript pages 2-3.

The plot of 15% ripple voltage line is shown in the manuscript page 4. The straight line EF in page 4 represents a full-wave rectifier, 60 Hz, having 15% ripple voltage. At any point on the line, one can look vertically downward to get a capacitor value in microfarads and look horizontally to the left to get the load impedance in ohms.

If the AC power source frequency increases, the line EF should move downward. If the AC frequency decreases, the line EF should move upward. The region above line EF represents ripple voltage less than 15% whereas the region below line EF represents ripple voltage larger than 15%.

Each point on the line EF represents one solution, namely, one load resistance value and one filtering capacitor value for a 15% ripple at 60 Hz frequency, full-wave rectifier. The line EF has infinite number of points, therefore, to achieve a 15% ripple, there will be an infinite number of combination of capacitor values and load resistance values, or an infinite number of answers. This is also explained previously in the examiner's first office action, page 4. Again, because claim 1 does not define the frequency, the load impedance, and the filtering capacitor value, there would be an infinite number of R,C combinations that can achieve a 15% ripple voltage of claim 1.

Similarly, there is also an infinite number of solutions for the ripple voltage less than 15% as well as for the ripple voltage more than 15%.

Applicant's other arguments have also been considered, but they are not convincing simply because the claims are unduly broad.

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Any inquiry concerning this communication should be directed to Bentsu Ro at telephone number 571 272-2072.

1/22/2007


Bentsu Ro
Senior Examiner
Art Unit 2837